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NOTES ON GEOGRAPHIC DISTRIBUTION

Orthoptera, Acrididae, Leptysminae, *Cylindrotettix riverae riverae* Roberts, 1975: New occurrence in Brazil, expanding its South American range.

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The genus *Cylindrotettix* belongs to the subfamily Leptysminae, tribe Leptysmini, which comprises elongated Neotropical grasshoppers, slender in form, with the male cercus strongly upturned from the basal portion, forming a narrow hook-like structure. They also have an elongated fastigium (longer than half the length of the eyes to longer than the eyes) and an unusual structure above the distal portion of the subgenital plate called *pallial sclerite* (Roberts 1975). The females may usually be distinguished by the denticulation of the ovipositor valves: dorsal valves have one large proximal tooth, followed by up to three small teeth or, sometimes, no tooth. The ventral valves usually have a large apical tooth and a pair of large proximal teeth.

The species *Cylindrotettix riverae riverae* Roberts, 1975 presents a fastigium longer than eyes (Figure 1), tapering moderately from lateral ocelli to near apex in dorsal view, then incurving to apex; apical portion in lateral view not at all or slightly curved downward (Figure 2); apical portion of fastigium in dorsal view broadly rounded; narrow portion of epiproct shorter than basal portion (Figure 3); upturned arm of cercus near apex as broad or broader than at base (Figure 4); a broader subgenital plate, with lobes broadly rounded (Figure 4); aedeagus covered by pallium not close to pallial sclerite (Figures 3; 4); narrower lobes of the cingulum extending up around sides of aedeagus well above the level of ends of lateral lobes and nearly to base of apical process; apical processes of aedeagus flared out to form a small, cup-like structure; dorsal and ventral hook-like ovipositor valves, with an apical tooth and two lateral intermediary teeth (Figure 5).

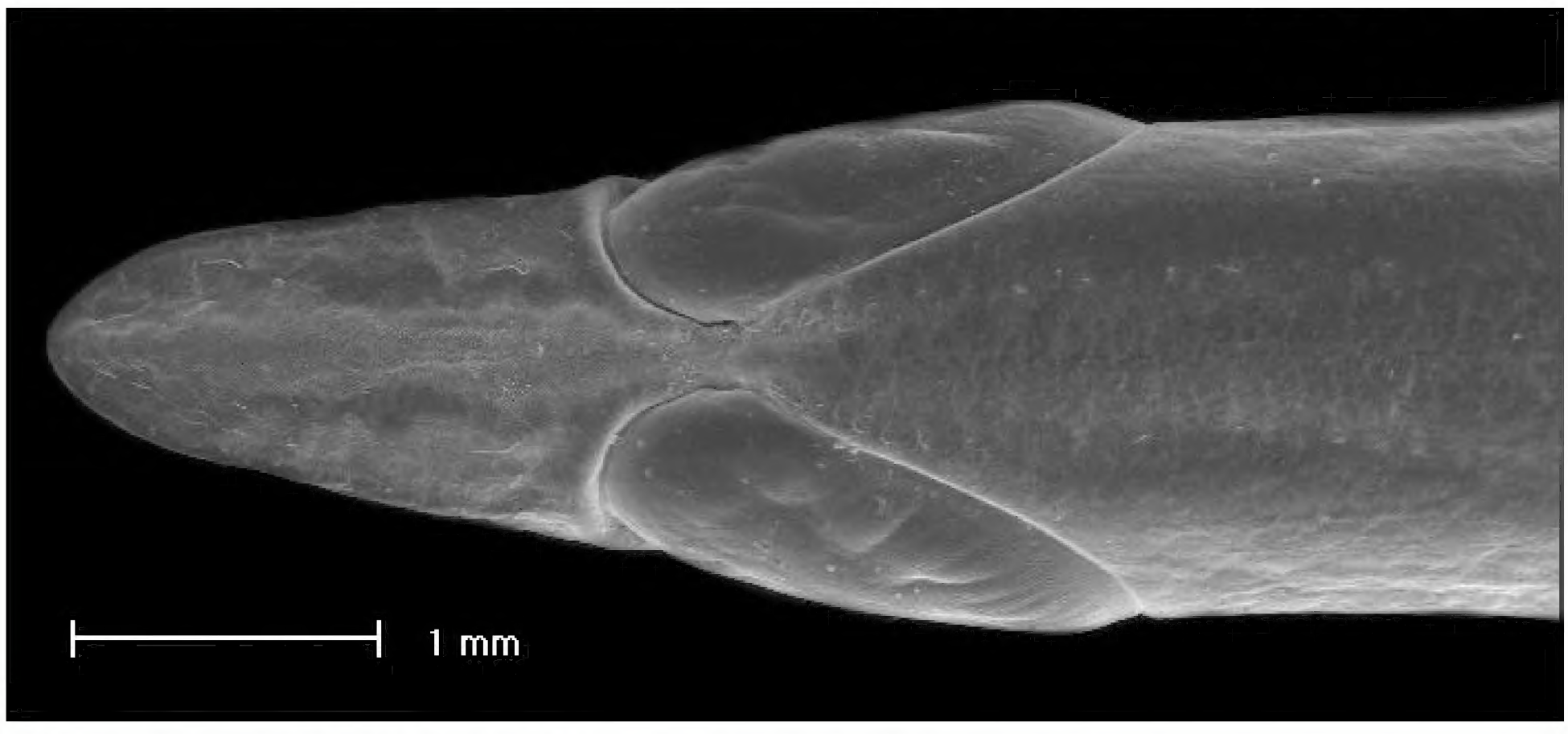

Figure 1. Head of *Cylindrotettix riverae riverae*, female, dorsal view.

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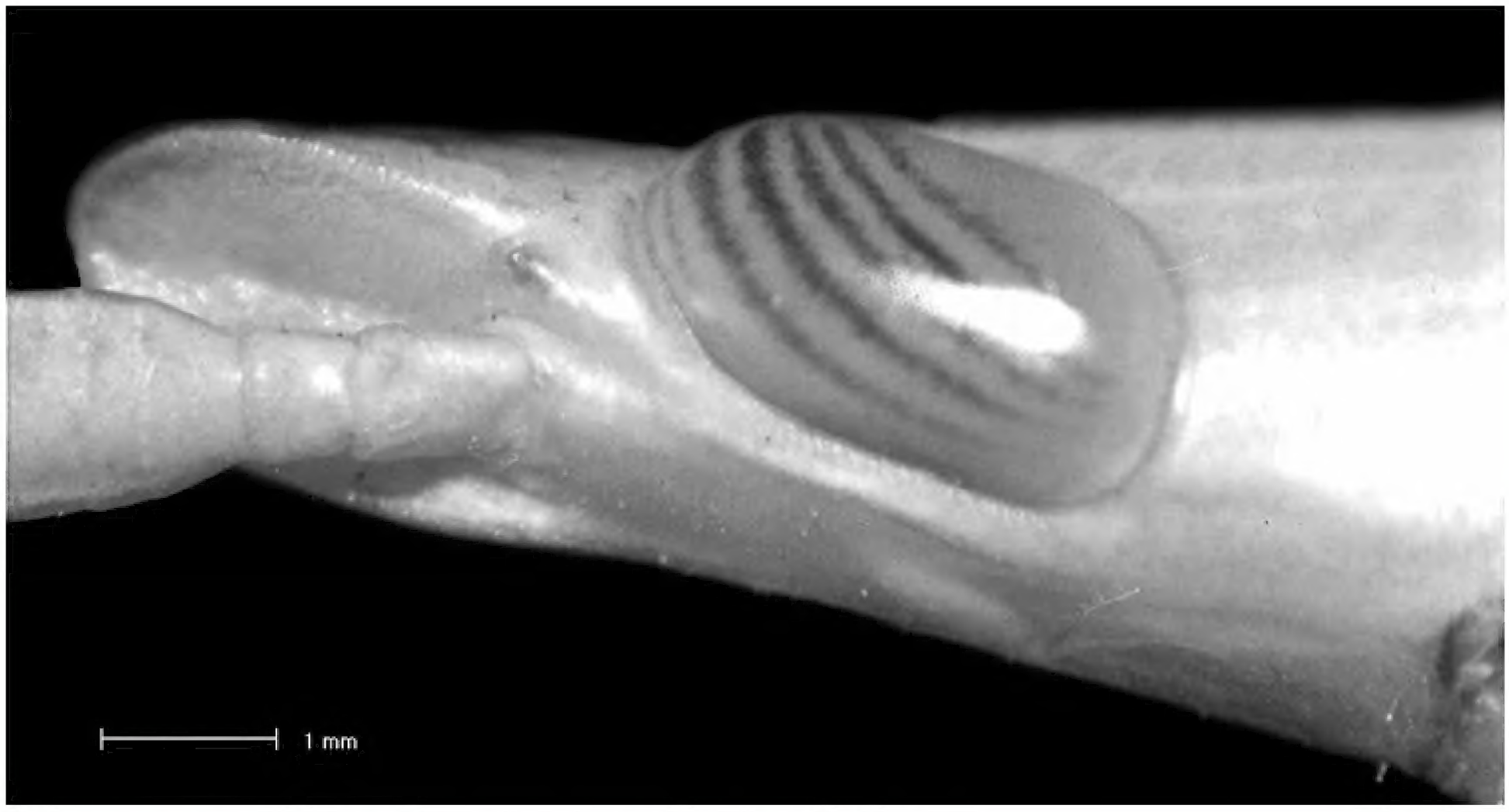

Figure 2. Head of *Cylindrotettix riverae riverae*, female, lateral view.

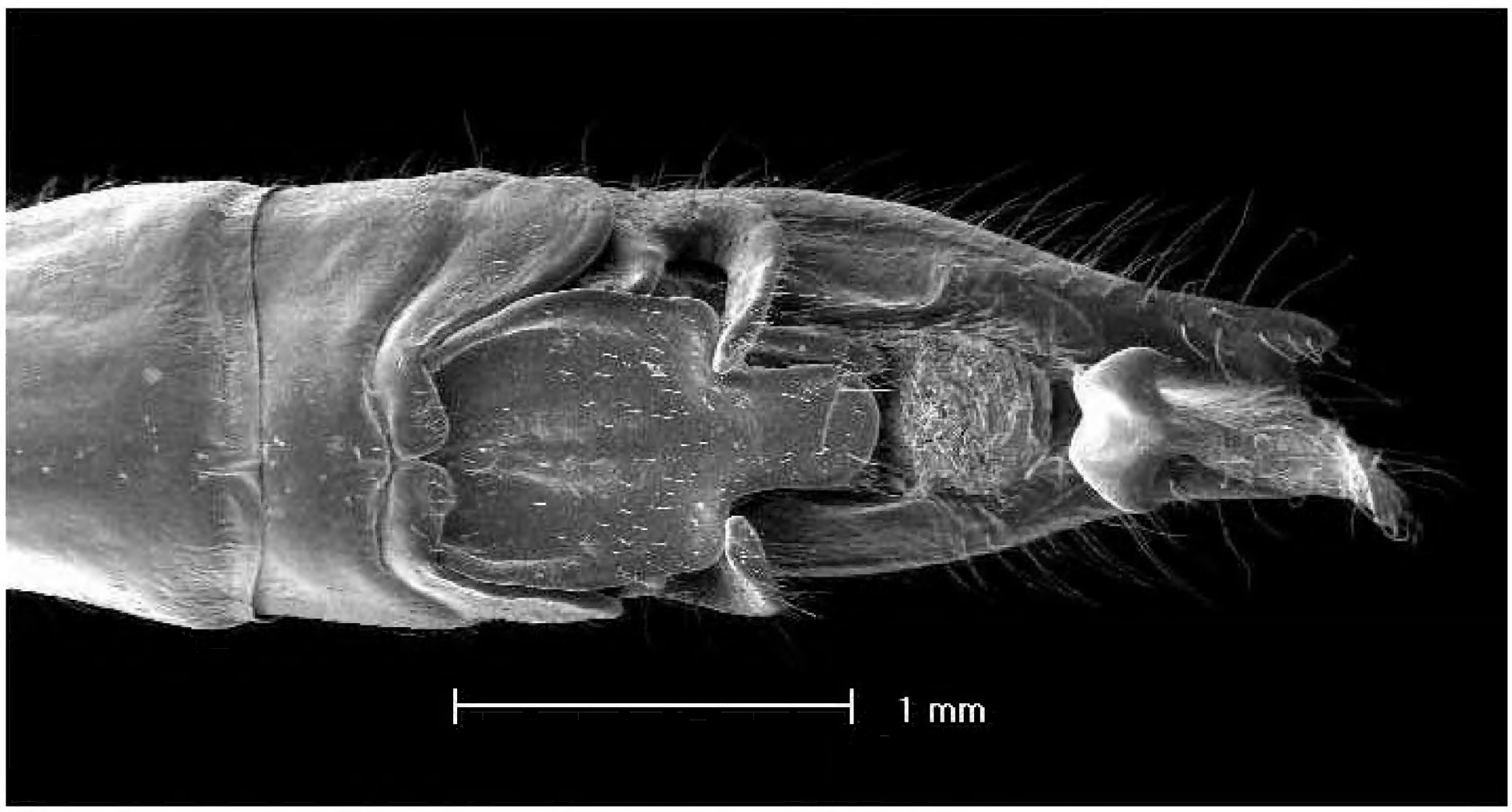

Figure 3. Terminalia of *Cylindrotettix riverae riverae*, male, dorsal view.

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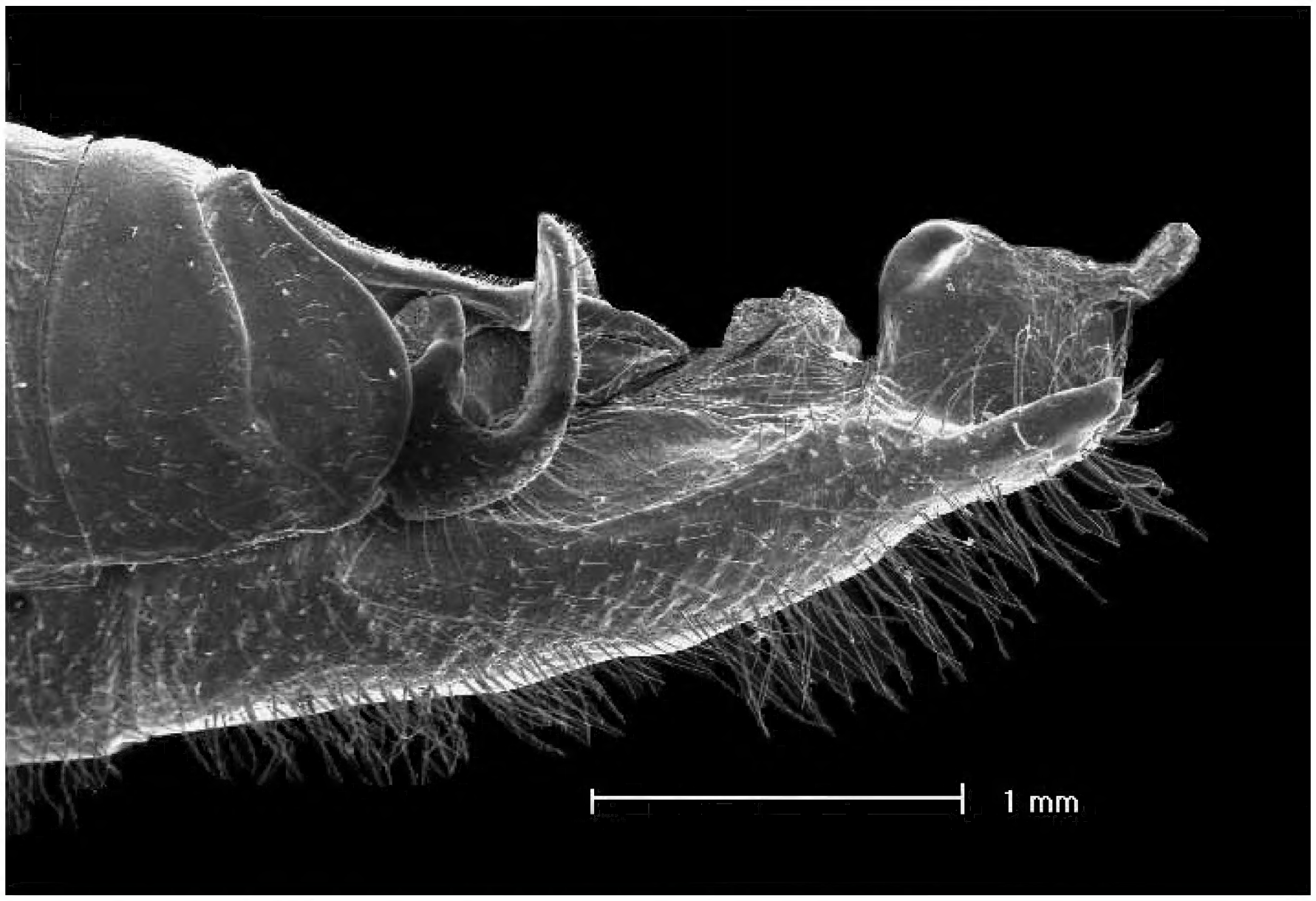

Figure 4. Terminalia of *Cylindrotettix riverae riverae*, male, lateral view.

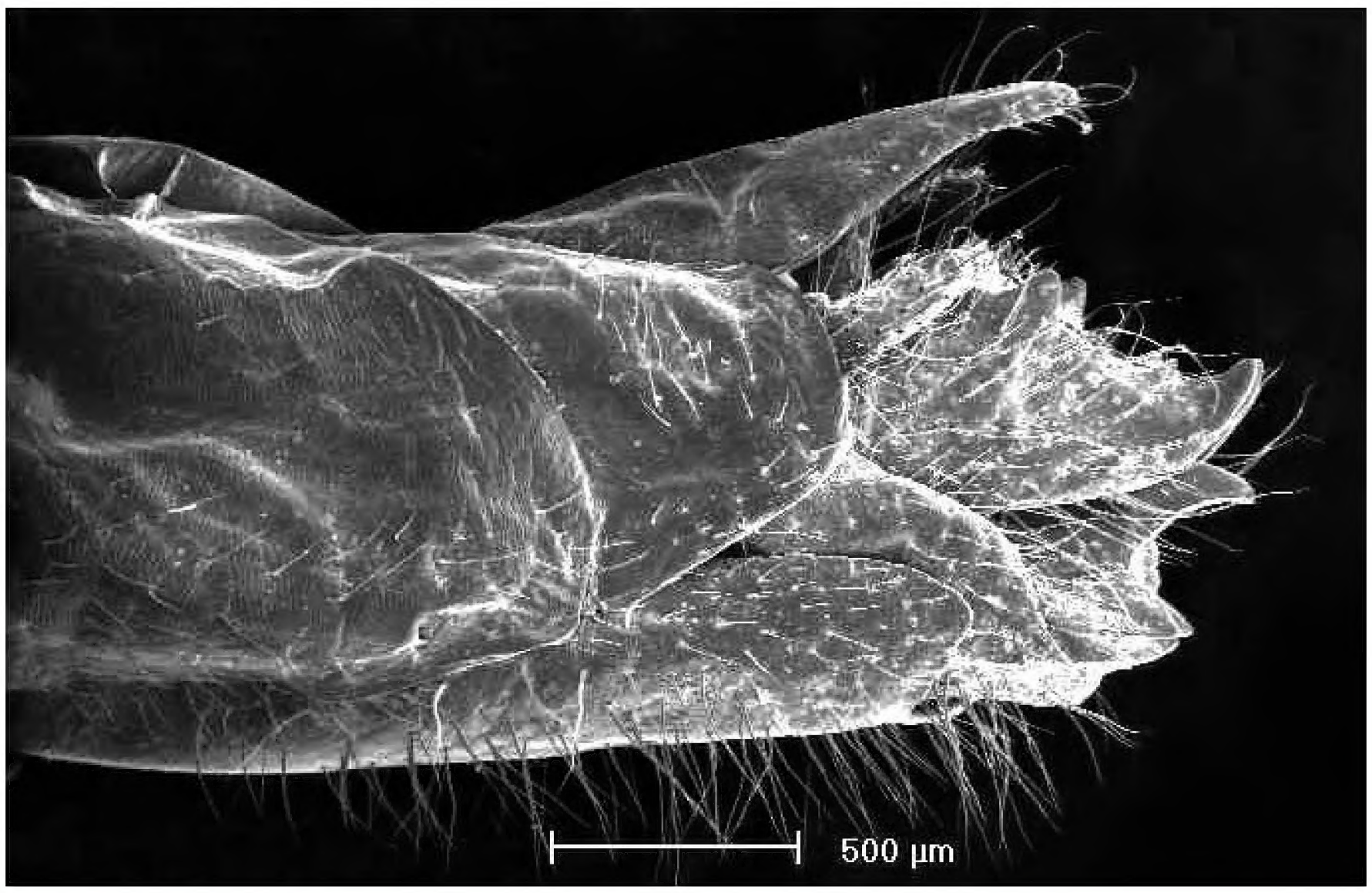

Figure 5. Ovipositor of *Cylindrotettix riverae riverae*, female, dorsal view.

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Even if this genus is observed in the field living in dry places, their species retain the adaptations for swimming, typical of Leptysminae group (Carbonell 1981), such as flattened hind tibiae and many hairs in the spiracles (Rehn and Eades 1961; Roberts 1978; Roberts and Carbonell 1979; 1980). *Cylindrotettix r. riverae* Roberts, 1975 is the smaller and slender species of this genus and is actually known by only 14 specimens (7 males, 7 females) collected in Uruguay (departments of Rivera and Tacuarembó) and one collected in Paraguay (Sapucay). All the specimens from Uruguay are deposited at the Museum of Natural History of Paris, France, and the male from Paraguay, at the Academy of Natural Sciences of Philadelphia, USA.

The specimens here examined were collected by one of us (MKMC) using an entomological net, during the day, not using a special methodological protocol, at the locality of Águas Claras, municipality of Viamão, state of Rio Grande do Sul, Brazil, in September, November, and December of 1998.

This area consists of tall grassland, dry but not far from river. The area of collection has about two hectares and is situated at RS-040 highway, km 26. The studying area is isolated due to the presence of a secondary forest and a grass field. In the southeastern region there is a native forest and a huge area covered by eucalyptus and figs (about 25 to 30 years old), that represents wood from exotic forest. The remaining of the adjacent areas consists of a lagoon and three dams. Viamão is contiguous to the metropolitan region of Porto Alegre and, according to Hoffmann et al. (1990), lies in the easternmost part of the Central Depression of Rio Grande do Sul, presenting an altitude of less than 100 m in general. The climate is tempered, with dry and humid seasons (Mota and Agendes 1986), with monthly averages of temperatures and rainfall oscillating throughout the year.

The collected specimens were taken to the Departament of Zoology of the *Pontificia Universidade Católica do Rio Grande do Sul* (PUCRS), dried, and deposited at the entomological collection of the same institution (numbers of registration are given at the Appendix). One male and one female of those specimens were studied under electronic microscopy, at the CEMM (Center of Microscopy and Microanalyses) of the PUCRS using a scanning electron microscope (PHILIPS model XL300). The structures of each specimen analyzed under electronic microscopy were: head, fastigium and abdominal terminalia. To better understand the occurrence of this species, a distribution map of *Cylindrotettix r. riverae* was made using the web-hosted program Online Map Creation (OMC) and edited using JASC Paint Shop Pro 8.1 Dell Edition® (Registered by MGL). All localities were geo-referred in decimal notation with the help of the Global-Gazetteer, version 2.1 (http://www.fallingrain.com/world).

The material was identified by one of us (MGL), comparing the specimens and the photos obtained by microscopy. The taxonomic review of this tribe is at present under study by this author.

Cylindrotettix r. riverae was well known for Paraguay and northern Uruguay. This discontinuous distribution was probably due to a lack of field work at the state of Rio Grande do Sul and eastern Argentina. The present specimens expand the geographic distribution actually know for this species, and suggest that it may occur in all Rio Grande do Sul area, (since the specimens were found in the east portion of the state) (Figure 6), and perhaps, in the eastern Argentina. Further field work in this area could confirm this proposed distribution.

Roberts (1977) already demonstrated how poorly Leptysminae was known at that time, and mentioned the possibility of expansion of the geographic distribution of the species when more field work was done. After thirty years, not much about the biogeography and systematics of this group have been done, and this new finding in Rio Grande do Sul confirms the requirement of major taxonomic efforts for acridiological studies in Brazil.

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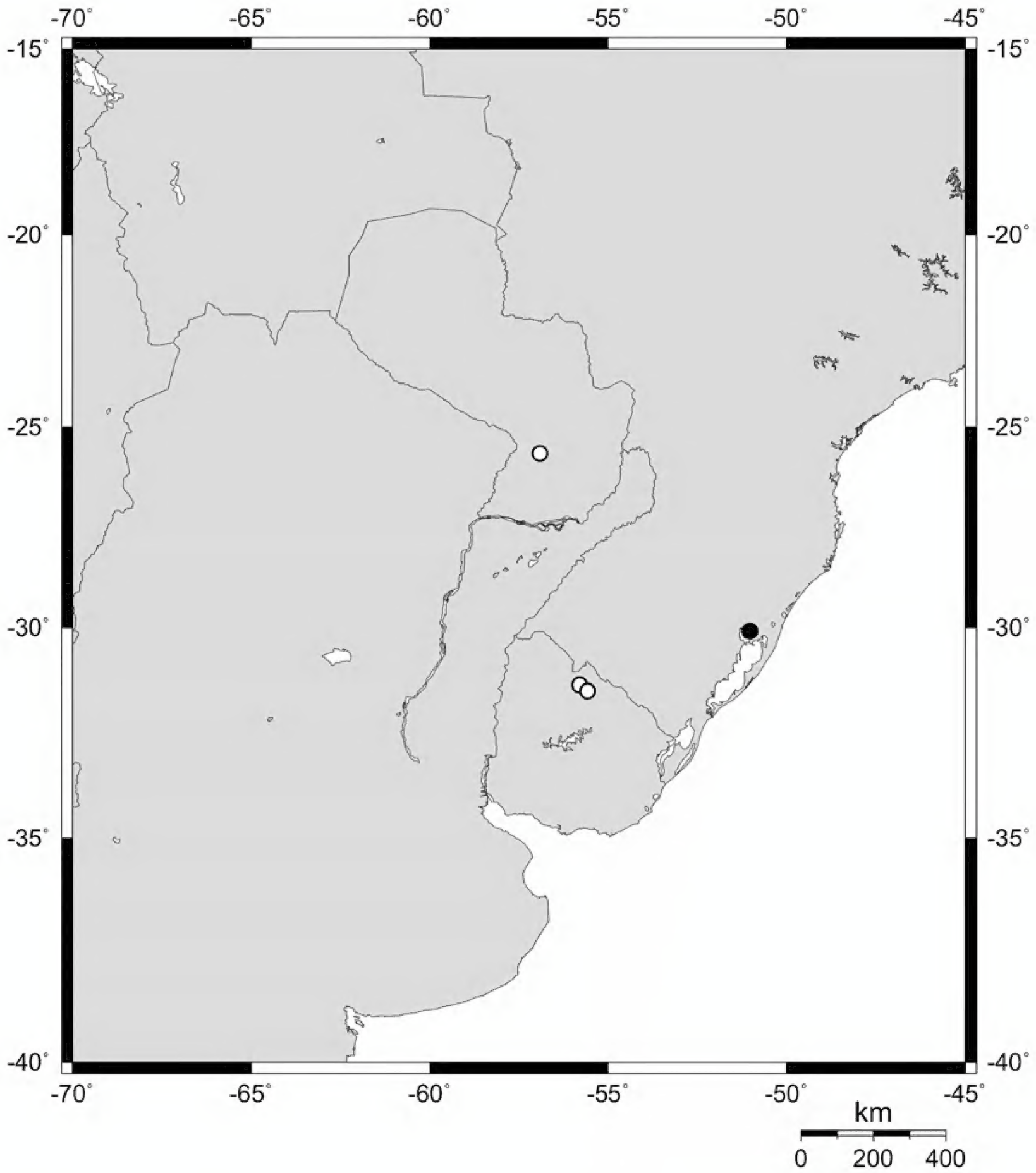

Figure 6. Distribution of *Cylindrotettix riverae riverae* in South America; white points, previously known; black point, new occurrence.

The present work becomes a starting point for future studies that might show that the distribution of this species in Brazil is probably much wider than indicated by the existing data. The record of the new occurrence in the state of Rio Grande do Sul will contribute to enlarge its geographic distribution in South America, and will increase its taxonomic knowledge. Additional studies on the biogeography of species belonging to Leptysminae are fundamental to a better evaluation and to increase the knowledge on the evolution and diversification of this group of Orthoptera.

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Appendix

Examined Material: BRAZIL: Rio Grande do Sul: Viamão (Águas Claras) (-51.0333, -30.0833), 27.Sept.1998 (M. K. M. da Costa), 1 ♂ (MCTP 8190); same, 28.Oct.1998, (M. K. M. Costa), 1 ♀ (MCTP 8197); same, 21.Nov.1998, (M. K. M. da Costa), 1 ♀ (MCTP 8198); same,12.Dec.1998 (M. K. M. da Costa) 1 ♂ (MCTP 8233).